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United States Patent [19]**Schnepp-Pesch et al.**[11] **Patent Number:** **5,540,713**[45] **Date of Patent:** **Jul. 30, 1996**[54] **APPARATUS FOR WIDENING A STENOSIS
IN A BODY CAVITY**[75] Inventors: **Wolfram Schnepp-Pesch; Josef
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Germany[73] Assignee: **Angiomed AG**, Karlsruhe, Germany[21] Appl. No.: **272,046**[22] Filed: **Jul. 8, 1994****Related U.S. Application Data**[63] Continuation of Ser. No. 959,616, Oct. 13, 1992, Pat. No.
5,354,309.[30] **Foreign Application Priority Data**

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[51] **Int. Cl.⁶** **A61M 29/00**[52] **U.S. Cl.** **606/198; 623/1; 623/11;
623/12**[58] **Field of Search** 606/198, 200;
623/1, 11, 12; 604/8, 96, 281[56] **References Cited****U.S. PATENT DOCUMENTS**3,657,744 4/1972 Ersek .
3,868,956 3/1975 Alfidi .
4,512,338 4/1985 Balko et al. .4,856,516 8/1989 Hillstead .
4,955,859 9/1990 Zilber .
5,078,736 1/1992 Behl 623/1
5,190,546 3/1993 Jervis 606/200
5,197,978 3/1993 Hess 623/1
5,344,426 9/1994 Lau et al. 623/1
5,354,309 10/1994 Schnepp-Pesch et al. 606/198**FOREIGN PATENT DOCUMENTS**0282175 9/1988 European Pat. Off. .
0380668 8/1990 European Pat. Off. .
2257262 1/1975 France .
2617721 7/1988 France .
9004982 5/1990 WIPO .
WO90/04982 5/1990 WIPO .*Primary Examiner*—Corrine M. Maglione*Assistant Examiner*—N. Kent Gring*Attorney, Agent, or Firm*—Antonelli, Terry, Stout & Kraus[57] **ABSTRACT**

An apparatus for widening a stenosis in a body cavity, such as an artery, in the bile duct, in the ureter, etc. is proposed, which in view of a problem-free, reliable and permanent widening of a stenosis is characterized by a memory alloy part having a cylindrical jacket-shaped outer contour, said part radially widening at a transition temperature, which is above ambient temperature, but below body temperature, while maintaining a cylindrical outer contour and at a temperature below the transition temperature the diameter is smaller than that of the vessel.

12 Claims, 4 Drawing Sheets